

Caesarean Section under Lower Intercostal and Pararectus block Technique in a Case of Acute Renal Failure

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Case Report

Abstract: Caesarean section has been known to humans for years now. Over years, with advancements in anaesthesia, it has become a convenient procedure. Maternal mortality from caesarean section is higher when compared to normal delivery (1 in 10000) Caesarean section is performed for various maternal and fetal indications. The anaesthesia used is either regional (spinal or epidural) or general anaesthesia. But conditions do arise where risks of anaesthesia outweighs the advantages. Acute renal failure is a rare challenging medical complication during pregnancy. Despite decreasing incidence mortality and morbidity of acute renal failure associated with pregnancy remains high. Management requires knowledge of the renal physiologic changes occurring in pregnancy and the relevant diagnoses, both pregnancy-specific and those that may coincidentally occur with pregnancy. Ideal medical care of these patients need a multidisciplinary approach considering maternal and fetal complications and timely specialist involvement. In certain situations with compromised maternal systemic conditions, local anaesthesia with bilateral intercostal and pararectal block with supplementation of I.V. sedation helps for excellent intra-operative anaesthesia and post operative recovery. One such case has been described below.

Keywords: Caesarean Section, Renal failure, Local anaesthesia.

Case Report

21 years old housewife was referred to our hospital from Jalgaon district, Maharashtra with 32 weeks pregnancy and ultrasound report suggestive of single live intrauterine pregnancy of 31 weeks with severe oligohydramnios with bilateral grade I nephropathy. Patient had fever with chills and burning micturition since 2 days with 4-5 episodes of vomiting, she had no history suggestive of pre-eclampsia. On examination, she was conscious, oriented. She was pale with pulse of 120 per minute and blood pressure of 110/70 mmhg. Her systemic examination revealed a haemic systolic murmur. Her investigations were haemoglobin 9.1gm%, Total leukocyte count 15000/cu mm, serum uric acid 10.5mg%, serum creatinine 5.4mg/dl, Blood urea- 59, RBS 122mg/dl, urine had 120 pus cells/hpf, albumin 3+. Total urine output in 24hours was 240 ml. ECG-sinus tachycardia CXR-PA view-increased bronchovascular

markings, Her liver function tests, fundoscopy, serum electrolytes were normal. So, the diagnosis of primigravida with 32 weeks gestation with urosepsis in acute renal failure was made. The decision of termination of pregnancy by caesarean section was taken by the obstetrician.

Method

Caesarean section was done under bilateral intercostal and pararectus block with Intravenous supplementation (injection Fentanyl 50micrograms) Lower Intercostal block was given on both sides (T6 to T12) with injection levobupivacaine 0.25%(2ml in each space)after negative aspiration of blood. Rectus abdominis muscle infiltration(40ml) was done vertically with 0.5%xylocaine+adrenaline. Vertical incision was taken below umbilicus and anaesthesia was maintained with oxygen(100%)

Result

The surgery lasted exactly 16mins. Injection pitocin 20units was given slowly after delivery of the baby. The patient had excellent intraoperative and postoperative analgesia with good haemodynamic stability and uneventful recovery. Male baby of 1.6kg was delivered and was shifted to NICU for further management. Postoperatively medical line of management for renal failure was instituted in the ICU. Patient was discharged on postoperative day 10 from our hospital on advice of regular medicine and paediatric follow up.

Discussion

There are physiological changes of pregnancy that occur in different maternal systems which may increase the risk of hypoxia, hypovolemia, aspiration pneumonitis during anaesthesia. Risks to the fetus include hypoxia and acidosis. Renal blood flow is increased in pregnancy. Glomerular filtration rate increases by 50%, resulting in a decrease of blood urea and nitrogen and creatinine.

Therefore normal blood urea nitrogen and creatinine values at term are abnormal and indicate severe renal dysfunction.(2)

Normal laboratory index in pregnancy (2)

Index	Change and range in pregnancy
GFR	Increase about 40% over baseline
Creatinine clearance	Increase about 25% over baseline
BUN	9 - 10 mg/dl
Creatinine	0.5 – 0.8 mg/dl
Urineprotein	less than 300 mg in 24 hours urine
Plasma osmolality	decrease about 19 mOsm/kg

Acute Renal Failure (ARF) may be defined as a sudden decrease in renal function which is usually reversible, over a period of several hours to days sufficient enough to result in retention of nitrogenous waste products (e.g. blood urea nitrogen [BUN] and creatinine) in the body(5). In pregnancy it can occur during antenatal or postnatal periods. Renal disease, either preexisting or occurring during gestation may impair maternal and fetal health. Adequate mean arterial pressure is required for renal perfusion. Aim should be to maintain the mean >70mm of Hg(>85 mm of Hg in hypertensives) to avoid further renal insult(1). The outcome of a polyuric ARF is better than an oliguric ARF. The main advantages of local anaesthetics are its safe, cheap and without serious effect on mother or child. The cooperation of surgeon and gentle handling of the tissues is essential for success of this technique(2). There is reduced blood loss due to adrenaline. The disadvantages (4) are that it is not always a perfect technique and the mother might experience considerable discomfort. The anaesthesia takes time to establish and gives less surgical exposure and also it requires substantial experience and specific skills on the part of surgeon and anaesthetists. In this case, Local anaesthesia was preferred considering chances of post-operative mortality due to Acute renal failure (5,6,7). Our aim was to prevent further deterioration of renal function and maintain adequate urine output(more than 0.5ml/kg/hr) (5,8) Spinal anaesthesia causes higher incidence of hypotension (9) hence avoided. All anaesthetic drugs, whether inhaled or injected, have potential to alter renal function by changing systemic blood pressure and cardiac output(3,5).The incidence of failed intubation in the obstetric population is 1 in 250,which is 10 times that in general surgical population(2). So by avoiding general anaesthesia further damage to the kidney can be avoided(6).Also a possibility of uremia induced slowing of gastric emptying(11) may complicate an option of general anaesthesia, considering that parturients are always considered full stomach after 20th week of gestation. Pregnancy is a state of both increased platelet turnover and clotting. Platelet count can be decreased leading to blood coagulopathy in cases of renal

failure(2).Also neuraxial regional anaesthesia is relatively contraindicated in a patient with coagulopathy and raised TLC in sepsis. Levobupivacaine is one of the least toxic local anaesthetic known. It has a longer duration of action when compared to its counterparts like lignocaine. It has a Pka of 8.1 and has a moderate onset of action(10).Absorption of a local anaesthetic also depends on its site and is maximum with intrapleural followed by intercoastal(1).Hence local anaesthetic toxicity must always be kept in mind in such procedures. Fentanyl is demonstrated to be a safe analgesic with decreased doses in a setting of acute renal failure. If glomerular filtration rate is >50ml/min then 100% of fentanyl gets metabolised and excreted causing no adverse effects or toxicity(11) Fentanyl clearance is not altered by renal failure(9)

Conclusion

Thus Cesarean section under local anaesthesia leads to good recovery of the patient, though this technique is used less frequently. Regional Analgesia is indicated to avoid some of the dangers of general anaesthesia, such as known impossible intubation and severe respiratory failure, and where relaxant problems are expected(12). Regional analgesia is used less frequently than it might be because of:

- a)time taken to establish block.
- b)inexperience of anaesthetist and their fear of failure
- c)unpopularity of having awake patient at operation
- d)concern that a single injection block may wear off in a few hours.(13)

Also the block once given, the analgesia cannot be extended in a scenario where the surgical time is extended. Hence although regional analgesia is an effective and proved option in cases of caserean operation its usage is limited in present day practise. This case also stresses the imporatance of effective surgeon-anaesthetist communication and cooperation in high risk patients.

Reference

1. Lee's synopsis of anaesthesia,13th edition,pg668
2. Stoeltings Aneasthesia and coexisting diseases,5th edition,chapter 23,pg558
3. R.S. Atkinson ,G.B. Rushman et al: A synopsis of anaesthesia,10th edition 1987;P542
4. CSLA: FOGSI National initiative on relevance, techniques and advocacy. An analysis of practices and recommendations. The proceeding of national consensus meet at Thiruvananthapuram, Kerala, on 3rd july 2004.
5. Keith G Allman ,Iain H Wilson et al : Oxford Handbook of anaesthesia ; 3rd edition 2011; p136.
6. Robert K. Stoelting :Pharmacology and physiology in anaesthetic practice 4th editiom P818.
7. Paul G. Barash, Bruce F. Cullen et al:Handbook of clinical anaesthesia 6th edition 2011 p826.
8. Managing complications in pregnancy and childbirth: A guide for midwives and doctors

WHO/UNFPA/UNICEF/WORLD BANK (WHO/RHR 100.7)2000 P 7-9.

9. Miller 17th edition Vol 2 P 2219.
10. Lee's synopsis of anaesthesia, 13th edition,section 4,pg 380.
11. Stoelting's Aneasthesia and coexisting diseases,5th edition,chapter 14,pg 329.
12. Lee's synopsis of anaesthesia, 13th edition,pg401.
13. Lee's synopsis of anaesthesia, 13th edition,pg402.

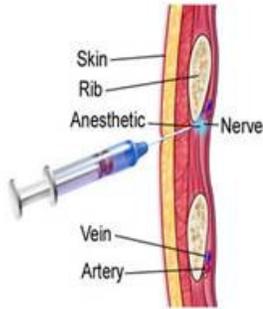


Figure 1: Point of Entry Should Be the Lower Border of the Upper Ribnegative Aspiration for Blood Should Be Confirmed

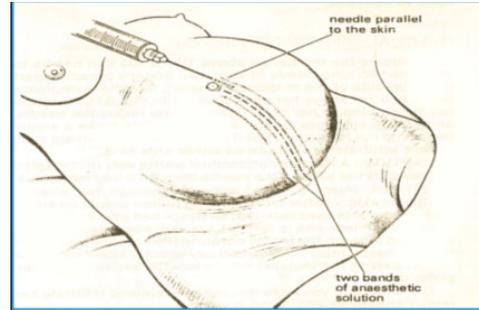


Figure 2: Bilateral Rectus Sheath Block Surgeon is asked to Take Vertical Incision

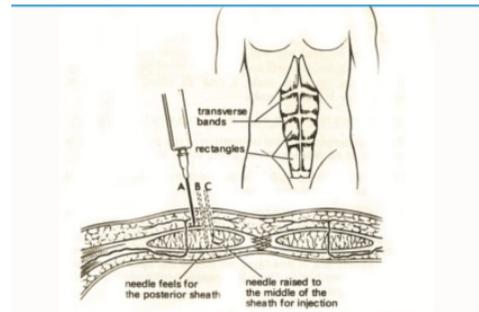


Figure 3: Anatomy of Rectus Sheath and Needle Position A- Needle Insertedb-Needle Feels for the Posterior Sheath C-Needle Raised In Middle for Site of Injection.